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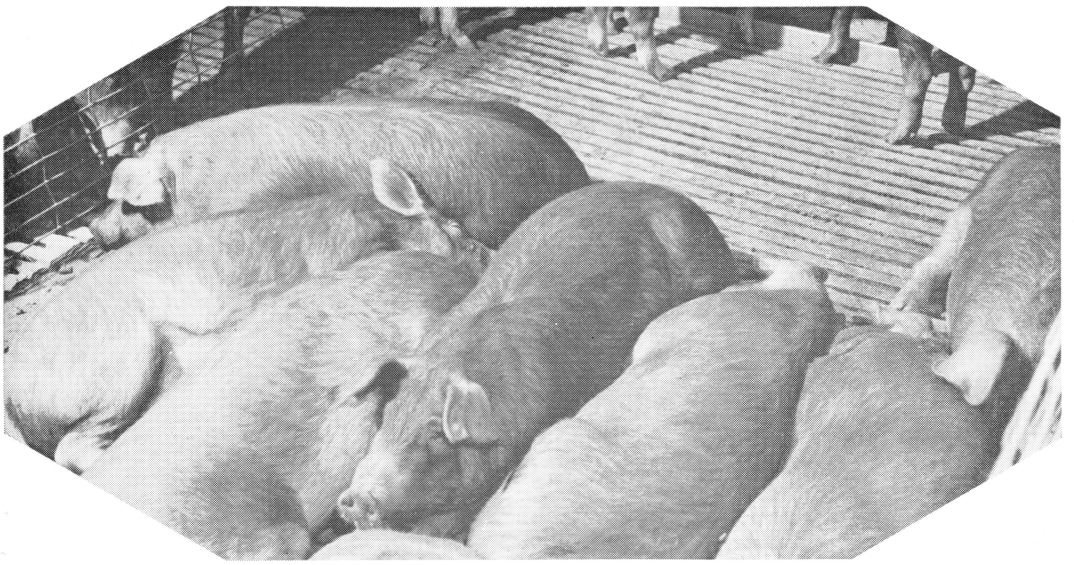

Health in Confinement Swine Production

by John R. Andersen

PRODUCTION of large numbers of pigs in a single unit intrigues most people in the swine industry and such operations are increasing. But some of these operations have failed—and most looked good on paper or in theory.

The primary reason for failure of confinement systems is disease. These diseases are not the common diseases of the past, such as hog cholera and erysipelas, but rather problems accentuated by confinement such as reproductive failures, agalactia, and bacterial scours. Successful confinement production requires careful attention to all phases of swine raising, including facilities, breeding, nutrition, management and disease prevention.

Facilities

Land and labor costs require that an efficient hog production unit consists of a total or nearly total confinement facility with specific areas designed for breeding and gestation, farrowing, nursery and finishing. Buildings have been designed with maximum labor-saving capabilities, but more information is needed on the environmental comfort and needs of the hog. The pig requires adequate space, dry clean quarters, minimal odor and a proper surface to walk and lie on.

Most confinement systems eliminate the use of bedding. Ideally, in the conventional hog house, bedding provides a temperature-and moisture-controlled surface for the pigs, and by controlling moisture and influencing cleanliness, also contributes to disease control. Pathogenic bacteria require moisture and nutrients for survival and multiplication.

Slotted floor systems are capable of keeping pigs dry and clean if properly constructed. At present, wide wood slots with a relatively narrow space between them appear to be most successful in the farrowing and nursery areas. Cement slots spaced wider apart have worked well for finishing and breeding age hogs.

Relative humidity and air movement are perhaps most critical in the farrowing house, but are important considerations in housing pigs of all ages. The typical herd history in baby pig bacterial scours reveals no scour problems in the first litters, but as more sows are added to the farrowing house, scours become a problem.

A buildup of pathogenic bacteria in the farrowing house is generally believed to be the cause of scours. As more pigs are added to the house, the relative humidity of the air increases above the generally recommended maximum of 70 percent — often to 75 to 80 percent. When this is combined with limited air movement, floor and wall surfaces fail to dry properly and bacterial growth is encouraged. Gas space heaters combined with heat lamps or other methods of heating the floor and continuous air movement even on the coldest days are important in keeping the problem of bacterial buildup to a minimum.

Slotted floor surfaces frequently cause abrasion of the skin and feet of the pig. This may result in

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streptococcal joint abscesses in 7 to 14-day-old pigs and arthritis problems in older pigs. Some floor surfaces are too abrasive, others too porous and still others too slick.

Baby pigs have better footing while nursing and suffer less skin abrasions on their knees if slats in the farrowing crate run parallel to the sow. Continued research could provide more suitable surface materials than are presently available.

Breeding

Certain bloodlines of hogs are better suited than others to confinement rearing due to conformation, temperament or even housekeeping ability. Confinement housing creates many stress conditions for the pig.

Selection of foundation breeding stock and boars for desirable disposition and soundness of feet and legs is essential. The best place to find this type of pig is in herds already using confinement.

Nutrition

Critical nutritional periods for hogs in confinement occur in the gestating sow and the newly weaned pig.

For maximum feed efficiency and reduced disease problems at farrowing, the gestating sow must be kept thin. This means limited feeding which results in slowed down digestive systems. Experience indicates sows fed laxative type rations at farrowing time will generally have less problems with MMA at farrowing. Beet pulp, bran and molasses are effective at this stage of production, but further research might result in finding an economical laxative that could be added in small amounts to the sow's ration.

An overgrowth of intestinal flora by certain serotypes of *Escherichia coli* in newly weaned pigs may result in two disease syndromes: Coliform enteritis of weaned pigs and gut edema.

Newly weaned pigs fill up on good quality, high protein feed which is quite laxative, but causes no trouble unless these coliform organisms are present. The occasional herd with either of these problems may benefit from feeding a ration somewhat higher in bulk and lower in protein for a few days after weaning. This type of ration does not provide an ideal media for the establishment and growth of large numbers of pathogenic coliform organisms in the intestine of the pig.

The reduction in growth rate caused by this ration may be much less than the loss from scours. However, these feeding changes should be considered a temporary measure and efforts made to eliminate the infection by management practices.

Management

Experience has revealed that the fewer square feet of floor space allowed per pig, the fewer pigs can be placed together in a pen. Large lots and pasture systems may allow several hundred pigs in a single pen, but confined pigs must be kept in small groups of 10 to 30 per pen, depending on their age. This is necessary to keep disease problems such as tail biting, gastric ulcers and bacterial diseases to a minimum and to enhance reproductive performance.

Solid walled curbed partitions between litters in the farrowing house and between pens in the nursery deter the spread by contact of many bacterial diseases. Semi-isolation of litters in the farrowing house and continuation of this isolation of individual litters in the nursery is important because the pig is very susceptible to organisms causing respiratory, arthritic and enteric diseases during the first weeks of life. Not only do these diseases spread more rapidly among younger pigs, but also the results of the disease are more serious.

Metritis-mastitis agalactic (MMA) problems are more severe during hot weather and in those sows taking a long time to farrow. Avoiding excitement of the sow and keeping her cool during farrowing are important in preventing MMA.

In some cases, baby pig scour problems are present in confinement-reared pigs. The use of older sows instead of gilts may prove worthwhile. Because these sows have had more exposure to organisms causing scours, their colostrum is more likely to contain more protective antibody for the pigs.

Disease Prevention

The "closed herd" approach is the logical method of disease prevention in the confinement herd. This involves obtaining foundation breeding stock, free of lice, mange, chronic mycoplasmal pneumonia (virus pig pneumonia), atrophic rhinitis, vibrionic dysentery (bloody scours), and mycoplasmal arthritis (P.P.L.O.).

Presently SPF (Specific Pathogen Free) pigs are one source meeting these requirements. After the breeding herd is established, all boars purchased must meet the same requirements. Artificial insemination is a good way to introduce new genetic material into the herd. This is a safe and economical way to produce your own "seedstock" and eliminate the risk of adding diseased animals to the herd.

Total confinement with the "closed herd" generally eliminates the need for spraying for external parasites and vaccination for erysipelas and reduces the need for worming for internal parasites. The use of antibiotics is best limited to use as growth stimulants at certain stages of production and at other times when particular disease problems warrant their use.

Conclusion

Special disease problems encountered with confinement have been the major obstacle to establishing a completely mechanized, economical production unit. Experience during the past 10 years has produced fairly clear definitions of the problems and provide guidelines for those considering future confinement production.

Disease prevention in confinement rearing requires careful attention to all phases of swine raising. Future articles in Iowa Farm Science will deal with these disease problems in more detail, outlining the environmental requirements of the pig, the mechanisms involved in the spread of disease and the inherent capabilities of the pig.